

I'm researching chemicals and the people who used them at home between the 1930s and the 1980s. This talk is part of my case study of a herbicide called paraquat. I'm focussing on two products: Gramoxone and Weedol. I'll discuss how they were portrayed and how they were used in the domestic environment, even though one of them certainly wasn't ever meant to be used at home.

My main sources have been newspapers, looking at advertisements, news and gardening columns in, because I wanted to examine the information available to people who might use this chemical at home. I'm going to draw heavily on the Daily Mail and The Times.

Paraquat was developed from 1953 by researchers at Plant Protection Limited, which was a subsidiary of Imperial Chemical Industries. Screening showed paraquat to be an unselective, very effective herbicide, plus its rapidly inactivated by clay particles in the soil, which was not how the company's most successful other weedkillers worked. William Boon, an ICI biochemist convinced his colleagues that being able to plant straight away in a treated area would be a benefit. ICI promised that paraquat would quickly boost the nation's total area of productive land, and exports would guarantee riches to the UK. In post-war Britain rebuilding its economy, these were powerful motivators to develop a new product.

Paraquat in the form of Gramoxone was introduced to the agricultural and horticultural market in 1962; it had a concentration of active ingredient paraquat at 20%. It only had approval for use in non-domestic situations, and supposed to be available only from certain suppliers. Gramoxone came as a brown liquid and among the warnings about avoiding contact with skin and eyes, or breathing in mists, there were instructions that it should not be repacked from the original containers. This new agrochemical was introduced to readers of business and agriculture sections of the newspaper, emphasising the economic gains to farmers and industry.

You might expect that Gramoxone, not intended for home use, would not be advertised in everyday newspapers. In The Times, Gramoxone appeared in two types of advert,

[show 1963 Research springboard]

This one was generally educational, profile boosting advert, not designed to sell any specific products to the reader.

[show Research pays off] The other was in an agricultural supplement or special report which The Times carried biannually. Here we can see ICI's ideal gramoxone user; he's a farmer, willing to try new technologies, bettering his farm for the long term. ICI would only pay to place ads where they would pay off, so we can see the Times readership as potentially reaching decision makers. No adverts introducing Gramoxone in the early 1960s were placed in The Daily Mail, indicating that this audience was not considered by ICI to be rich in agrochemical buyers.

For domestic users Plant Protection developed a less concentrated paraquat-based weedkiller called Weedol, which they started marketing in 1965. In December 1964, paraquat for amateur use was already being excitedly anticipated in the Mail's and the Times' gardening columns, with the focus on reducing time spent weeding and backache. Both papers carried ads regularly from 1966, and gardening columns frequently suggested paraquat for certain weeding jobs.

[show 1966 advert]

The amount of paraquat was only 5% instead of 20%, not something we can tell from the adverts. It was sold as small packets of granules where the whole amount was to be dissolved directly in a 2 gallon watering can. This reduced the need for the user to measure out or handle the product. The fairly small amount of solution meant that it should all be used up, so that there wouldn't be any left over that people might be tempted to store. In these earliest adverts, we aren't shown a full image of the user but we can see some hands in masculine shirt sleeves, trousered legs. No kneeling, no grass stains or mud, using Weedol is clean and easy. We're given a lot of information about its benefits, how and where to apply it as well as what the packaging look like. We're told it's harmless (when used as directed), that it doesn't disturb the soil which would encourage more weeds. No attempt is made to explain how it kills plants.

[show 1968 advert]

In slightly later adverts, we are shown this domesticated, middle aged man, he's at leisure in his garden. Women are not shown in any of these adverts. Are women less inclined to use weedkillers? Are women supposed to be nurturing rather than destructive? Maybe who actually uses weedkillers, and their reasons, will come through in oral history work or more archival research.

Before bringing any products to market Plant Protection carried out acute and chronic LD50 tests on rats, rabbits and a small sample of hens. These showed that death from acute poisoning was possible, but also at low enough concentrations, paraquat could be eliminated without any apparent effects. Disruption of finger nail growth and nosebleeds in staff packing the chemical had also been observed, explained away by improving the use of gloves and better ventilation, despite the mechanism of action being unknown. The benefits of the chemical seemed to outweigh the potential problems, problems that could be avoided if sensible precautions were taken.

The first years of any paraquat product to market were like a giant field trial. Plant Protection had to collect and report back to regulatory boards all known negative effects, so that the chemical could be reviewed. In the first three or four years of use, there were no reported fatalities from paraquat anywhere in the world. There were skin lesions from leaky apparatus leaving agricultural sprayers in contact with gramoxone for prolonged periods, but this had been foreseen and warned against by Plant Protection. When some Weedol users experienced skin problems, user carelessness was the problem cited by Plant Protection.

[show deaths slide]

From January 1966, accidental deaths from Gramoxone started to occur, at first in Ireland. These deaths are not reported in English mainstream newspapers. ICI decided that the relatively high number of deaths in Ireland when considered in relation to the amount of Gramoxone used was because small scale agricultural users in Ireland had a cultural tendency to buy small amounts in reused, unlabelled containers and that this was not how things were done in England, Scotland and Wales. I wanted to show this page, so that you can see ICI's case descriptions. They are all loaded somehow to emphasise the human aspect, as well as perhaps some stereotypes.

The first paraquat related death to be reported in the Daily Mail, The Times and other newspapers was actually the story of the first lung transplant attempted in Europe. The focus of the articles was always the surgical milestone, with the weedkiller in some reports not even being named. In this instance, it was a reused, unlabelled beer bottle at fault, and the source of the herbicide was an allotment group that had clubbed together to buy it. The victim of accidental poisoning was a teenage boy, described in a BMJ article by surgeons as "intelligent", a departure from the descriptions of Irish accidents referring to drunks and mental retards. ICI however, stress the teenage and beer bottle aspect of the incident.

In 1968 paraquat left the confines of niche gardening, business and farming columns when fatal accidental poisonings started appearing as news items in their own right. Gardening columns were often driven by readers' letters, and in that year readers of the Times wanted to know why Roy Hay kept casually recommending a potentially lethal chemical to them, without ever mentioning risk. The columnist reiterated the existence of a domestic version which was much safer. But to be fair to the readers, he usually simply said paraquat rather than Weedol, described the domestic version as "smaller packs" rather than less concentrated, and directed them to follow the manufacturers' instructions.

Similarly, in articles about accidental poisoning found in the main body of the paper, the chemical paraquat is held accountable, with accurate trade names used infrequently. Occasionally for greater emphasis or connection with the reader, Weedol was mentioned as containing paraquat. To a casual newspaper reader without their own experience of the products, who were not closely reading stories spread out over time, it would be easy to come away with the idea that all paraquat products were somehow imbued with the intention of wreaking death.

MAFF described people who brought home Gramoxone as trying to avoid the expense of buying Weedol. From the circumstances reported in newspapers, liquid paraquat preparations tended to be brought home by quite young men, who worked in agricultural or horticultural jobs, or were in social circles with people who had access to the herbicide. One of the accidents occurred in a static caravan park, not generally known for the wealth of their inhabitants. In Weedol adverts that depicted a user, the imagined, perhaps affluent, user did not match the image of those who were involved in accidental gramoxone poisoning cases.

News stories invariably conveyed the lack of effective treatment, often deploying the stock phrase "no known antidote". This idea grabbed the imagination, and it was sufficiently frightening to sell newspapers, and prompt readers to write letters calling for it to be banned. Arsenic based weedkillers had been fatally poisoning people for much longer, and correspondingly progression and management of poisoning was better understood and accepted. As Boon wearily noted, this antidote statement was technically accurate, but it was not unusual as in the true sense of antidote where one chemical neutralises another, very few poisons have an antidote, not even aspirin.

However, it was useful shorthand in newspapers for expressing the horror and despair that was experienced by victims, their families, and the medics who cared for them. The lining of the mouth and throat could be burned and ulcerated, and the kidneys could also be acutely stressed and permanently damaged. In the lungs, paraquat causes cell proliferation and inflammation, described in newspapers as solidifying, which steadily and irreversibly reduced lung function. Despite doctors' best efforts to deactivate or dilute the chemical in the bloodstream, they were very rarely successful, it was often hard to know how much had been ingested to start with and tests for quantifying paraquat in blood and urine were crude.

When reporting accidents, journalists were objective towards those who brought the potent chemical home and accidentally poisoned a family member. However, they didn't mince words when they could be delivered from authority figures. William Boon, father of paraquat, was reported as attributing accidental deaths to "human stupidity". Keeping Gramoxone in unmarked, reused bottles was "asking for it", The Times reported a coroner as saying in 1969.

[show Should this killer article]

In summer 1972, marking ten years of paraquat on the market the Daily Mail ramped up their reporting of paraquat poisoning. The newspaper ran their own investigation into how easy it was to obtain Gramoxone, showing that controls on retail were not working. They contacted spokespeople from Plant Protection, ICI, MAFF, as well as the pharmaceutical society, and were able to portray the chemical company positively, as working hard to make the formulation of the very effective and valuable herbicide safer, and investing in to find better treatments for poisoning. They kept a running totals of deaths, continued calling for better retail practices, clearer labelling, and more thorough governmental approval processes, while continuing to carry regular advertisements for Weedol and other ICI garden care chemicals. Later in 1972 the Mail carried their first report on suicide using paraquat, though we saw from the earlier slide that it had been used for this purpose for longer.

In 1973 Dr Matthews of the Poisons Board blamed what he called "disproportionate" media coverage given to paraquat deaths for the fact that in Scotland, the number of accidental deaths from paraquat was overshadowed by the number of suicides with the chemical. Weedol featured in numerous para-suicides; the reports in medical journals of this uses of the domestic chemical do not state whether the user knowingly chose this weaker form as a signal of distress, or because they were unaware that the paraquat reported on in most news stories was actually the more potent form Gramoxone.

In 1974 the first trial of a murder using paraquat, in the form of Gramoxone, was reported on. The Daily Mail followed that trial doggedly over 12 articles, to the Times only ran 2. Murderous paraquat users were portrayed as adulterous, jealous men and women, in turbulent or unconventional relationships, who administered the weedkiller at close quarters in sherry, cups of tea or mixed into stews. Paraquat murder trials were described in great detail in the newspaper. In one case, a woman who poisoned her husband even stated that she had got the idea from a story in the newspaper. On the subject of responsibility for copy cat or planting the seeds of ideas, newspapers remained quiet.

Paraquat, as both Gramoxone and Weedol, was enthusiastically received in niche newspaper columns. Gramoxone, never intended by the manufacturers for domestic use *was* invited into some private homes and gardens, where it sometimes resulting in fatal poisoning. Despite Gramoxone being on the market since 1962, deaths relating to it were only evident from 1966, around a year into Weedol being widely marketed to home gardeners. Overall, the number of deaths in relation to the total volume of paraquat sold and used was very small, the precautions were easily followed and the herbicide was extremely effective. This meant that ICI and regulatory government committees could not seriously contemplate a ban, although ICI were directed to, and did, investigate a variety of changes to the formulation, which resulted in adding Bitrex to deter people from drinking large amounts, and a chemical to make Gramoxone smell foul.

I conclude that unintended uses of paraquat herbicides brought the chemical to wider attention, and media reports, which for brevity and impact blurred the distinction between Weedol and Gramoxone, contributed to unintended uses being perpetuated.

Thank you for your attention. I look forward to your comments and questions.